Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-39 (Cancelled)

Claim 40 (Currently Amended): A method of detecting motion in nanoscale structures, comprising:

providing a molecular structure having a rotating arm;

attaching a rod-shaped nanoparticle to the rotating arm of the molecular structure so that the nanoparticle rotates with the rotating arm of the molecular structure, wherein the nanoparticle has a first surface along one axis and a second surface along a second axis, and wherein the first surface has greater area than the second surface;

exposing a nonpolarized white light to the nanoparticle, wherein a first surface of the nanoparticle scatters a first polarized wavelength of the nonpolarized white light for the subset of photons aligned with the first axis of ~~when~~ the nanoparticle ~~is in a first position~~ and a second surface of the nanoparticle scatters a second polarized wavelength of the nonpolarized white light for the subset of photons aligned with the second axis of ~~when~~ the nanoparticle ~~is in a second position~~;

filtering the first and second polarized wavelengths of the nonpolarized white light through a polarizing filter to detect rotational motion by observing alternating first and second polarized wavelengths of the nonpolarized white light as rotation brings each polarized wavelength into alignment with the polarizer; and

disposing a detection DNA strand between the nanoparticle and the molecular structure, wherein the detection DNA strand hybridizes with a target DNA strand, if the target DNA strand matches the detection DNA strand, to form a structural link between the molecular structure and the nanoparticle thereby causing said nanoparticle rotation indicating detection of the target DNA strand.

Claim 41 (Cancelled)

Claim 42 (Previously Presented): The method of Claim 40 wherein the rod-shaped nanoparticle is a gold nanorod.

Claim 43 (Previously Presented): The method of Claim 42 wherein the first polarized wavelength of the light is longer than the second polarized wavelength of the light.

Claim 44 (Previously Presented): The method of Claim 43 wherein the first polarized wavelength of the light is red light and the second polarized wavelength of the light is green light.

Claim 45 (Previously Presented): The method of Claim 40 wherein the molecular structure is an F1-ATPase enzyme.

Claims 46-48 (Cancelled)

Claim 49 (Currently Amended): The method of Claim [[47]] 40 wherein the rod- shaped nanoparticle is a gold nanorod.

Claim 50 (Previously Presented): The method of Claim 49 wherein the first polarized wavelength of the light is longer than the second polarized wavelength of the light.

Claim 51 (Previously Presented): The method of Claim 50 wherein the first polarized wavelength of the light is red light and the second polarized wavelength of the light is green light.

Claim 52 (Currently Amended): The method of Claim [[47]] 49 wherein the molecular structure is an F1-ATPase enzyme.

Claims 53- 59 (Cancelled)

Claim 60 (Currently Amended): A method of detecting motion in nanoscale structures comprising:

providing a molecular structure having a rotatable arm;

attaching a nanoparticle having a first axis and a second axis to the rotatable arm of the molecular structure so that the nanoparticle rotates with the rotating arm of the molecular structure, the first axis of the nanoparticle having a greater length than the second axis;

disposing a detection DNA strand between the nanoparticle and the molecular structure, wherein the detection DNA strand hybridizes with a target DNA strand such that if the target DNA strand matches the detection DNA strand they form a structural link between the molecular structure and the nanoparticle causing the nanoparticle to rotate;

providing nonpolarized white light from a fixed location;

altering a path of the nonpolarized white light from the fixed location to create an oblique angle with respect to the first axis and second axis of the nanoparticle;

exposing the nonpolarized white light from the altered path onto the nanoparticle, the first axis of the nanoparticle scattering a first polarized wavelength of the nonpolarized white light for the subset of photons aligned with the first axis of ~~when~~ the nanoparticle ~~is in a first position of rotational motion~~, the second axis of the nanoparticle scattering a second polarized wavelength of the nonpolarized white light for the subset of photons aligned with the second axis of ~~when~~ the nanoparticle ~~is in a second position of rotational motion~~;

providing an iris which passes the first and second polarized wavelengths of scattered light and blocks unscattered light;

~~providing a polarizing filter which is aligned only to the first and second polarized wavelengths of the light wherein the polarizing filter blocks light not aligned with the filter;~~

providing a polarizing filter in a fixed position that allows only the first polarized wavelength of light to pass when the nanoparticle is aligned with the first axis and only

the second polarized wavelength of light to pass when the nanoparticle is aligned with the second axis;

processing the first and second polarized wavelengths of light onto first and second channels, respectively; and

detecting alternating first and second polarized wavelengths indicating motion of the nanoparticle and the molecular structure indicating detection of the target DNA strand.